

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Serial No. : 10/001,439 Confirmation No. 2421
Applicants : McANALLEY, B.
Filed : October 25, 2001
TC/A.U. : 1654
Examiner : Coe, Susan D.
Docket No. : 23100.40

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Declaration of Dr. Bill McAnalley

I, **Dr. Bill McAnalley**, being hereby warned that willful false statements and the like so made are punishable by fine or imprisonment, or both, under 18 U.S.C. §1001, and that such willful false statements may jeopardize the validity of the application or any patent issuing thereon, declares the following:

1. All statements contained herein made of my own knowledge and are true and all statements made on information and belief are believed to be true.
2. My list of issued United States and foreign patents is found in my Curriculum vitae and includes 24 issued United States Patents.
3. I received my Ph.D. (Pharmacology-Toxicology), 1978 from the University of Texas Southwestern Medical School in Dallas, Texas, with Postdoctoral Training in Forensic and Clinical Toxicology, 1979-1981, Dallas Institute of Forensic Science and Southwestern Medical School in Dallas.
4. I am formerly the Chief Scientific Officer of Mannatech, Inc. and Vice President, Director of Research – Carrington Laboratories in Irving, Texas.
5. A complete copy of my forty-one (41) page Curriculum vitae is attached.
6. I have provided testimony and/or expert consulting services to the following United States District Courts: District of New Jersey, Eastern District of Louisiana, Eastern District of Arkansas, Middle District of Louisiana, Southern District of Texas, Western District of Wisconsin, Central District of California and the Louisiana Environmental Control Commission.
7. I am the named inventor of U.S. Patent Application Serial No. 10/001,439 filed on October 25, 2001 and have reviewed the claims and am familiar with the

technology and steps described in the patent application. I am familiar with the Decision of the Board of Patent Appeals dated September 22, 2006 and the patents or applications cited against the claims of my application No. 10/001,439, namely, U.S. Patent No. 5,576,015 to Donzis, U.S. Patent No. 5,531,989 to Paul and Internacional Patent Application No. WO 97/05884 to Plaut.

8. I am herewith providing the present Declaration to provide the context within which the subject matter of the claims at issue was developed and the considerations that went into the development of the product now sold under the tradename ImmunoSTART[®] by Mannatech, Inc.
9. At the time of the development of the ImmunoSTART[®] product, which is claimed in the '439 application, there was no commercially available product that incorporated the components of the claimed composition, namely, colostrum containing lactoferrin, beta-glucan, citrus pectin and guar gum. The purpose behind the novel combination was to "re-start" the immune system by providing colostrum to help protect the user, as well as immune stimulants that were selected from hundreds of possible options because of their unique functions in the formula and because they are regulated as food versus drugs and, therefore, could be marketed as dietary supplements. The active ingredients were chosen for the following reasons.

Most colostrum products on the market are ineffective because the colostrum has been denatured when it is processed and purified. So for the base of this product, I found a colostrum that is produced under a USDA Outline-of-Production for injectable immunoglobulin. Through a testing program, the USDA assures the efficacy of every batch.

The colostrum is most effective when it comes in contact with the immune system through contact with the oral mucosa. Oral cattle vaccines had demonstrated that proper stimulation through the oral mucous membrane could systemically benefit the entire immune system. Therefore, I looked for something to hold the colostrum in place in the mouth for as long as possible (lozenge). Since amylase in saliva breaks alpha bonds, but not beta bonds, I needed something that was beta-bonded and, thus, would remain intact in the mouth for an extended period of time.

Also, I needed something that contained polymannose. Since the macrophage cell is the antigen-presenting cell, and since the macrophage is attracted to polymannans, which it grabs with its mannose receptors and ingests, I needed a polymannan that was beta-bonded in order to attract macrophage cells. (Note: Macrophages reach through the mucus membrane of the mouth and can actually be attracted to certain foods while you are eating.)

Also, I chose beta glucan and citrus pectin, which have two of the necessary characteristics—they are both beta-bonded and also provide "scaffolding" to help hold the lozenge in place in the mouth. In addition, they are known immune

stimulants, so their inclusion to the formula would not dilute the immune stimulating effect, but rather add to it.

Currently no one can explain the increase in autoimmune diseases such as lupus and the occurrence of new diseases such as chronic fatigue and fibromyalgia. However, I believe these are caused by our increased exposure to environmental toxins, prescription drugs, childhood vaccines, and the shrinking world that exposes us to more and more viruses at a faster rate. These turn off or reroute parts of the immune system, similar to the effect computer “viruses” have on computers. Just as computers may need to be rebooted, so our own immune systems may need to be restarted at times. This product was designed to restart the immune system. Hence, the naming of the product “ImmunoSTART®” for a composition that “re-starts” the immune system.

10. The selection of the components of the claimed composition also addressed the need to provide a product that could be immediately marketed because it included those components that are Generally Regarded as Safe (GRAS) for oral consumption. Hence, the product became immediately available to the public, and achieved widespread success.
11. I have reviewed the patent and patent applications cited by the examiner and the Board of the Appeals and Interferences (“Board”) against the claims in the present invention. While the Board makes a strong argument for their combination, during the time between the issuance of the cited patents and application and the filing of the present application not a single viable product other than the Applicant’s ImmunoSTART® product entered the market that included the listed components.
12. A critical reason for the failure of commercial viability was the need to use concentrated immunoglobulins (as taught by U.S. Patent No. 5,531,989 to Paul) which would make the product prohibitively expensive.
13. Upon introduction of the ImmunoSTART® product its sales exceeded initial projections and expectations. ImmunoSTART® is a fixture in the Mannatech line of products and continues to enjoy strong sales. To the best of my knowledge, the sales for all Mannatech products in the year 2006 will approach 400 million U.S. Dollars. ImmunoSTART® accounts for a significant revenue to Mannatech as certain users find a benefit from “re-starting” the immune system and allowing Ambrotose® (Mannatech’s flagship product) to work more efficiently. Upon information and belief Ambrotose® will approach 200 million U.S. Dollars in sales in 2006.
14. Mannatech’s Independent sales associates have reported to me that the effects of ImmunoSTART® far surpassed their previous usage of competing nutritional supplements, including colostrum and colostrum-based products. It is my belief

based on the testimony of hundreds of users of colostrum and colostrum-based products versus their use of ImmunoStart, that ImmunoStart met a long-felt need in the consuming public for a product that addressed critical issues of nutrition and immune-support.

15. Despite the availability of Paul 5,531,989, which issued July 2, 1996; Donzis 5,576,015 which issued Nov. 19, 1996; and Plaut with a date of Feb. 20, 1997, not a single product that met the needs of users of the ImmunoStart product was available five years after their availability, namely, immune support and nutritional supplementation with saccharides that include those in guar gum, citrus pectin and beta glucans. That is, despite 5 years of the availability of the references in public, to the best of my knowledge, no product had incorporated the listed ingredients nor had any viable product addressed the long-felt need in the nutritional supplement field.

Signature: 

Name: Bill H. McAnalley, Ph.D.

Date: November 22, 2006

Bill Herman McAnalley

Curriculum Vitae

DATE AND PLACE OF BIRTH

April 24, 1944, San Angelo, Texas

ACADEMIC AND WORK EXPERIENCE

| | |
|-----------------|--|
| 1996 to present | Sr.Vice President and Chief Science Officer Research & Development Mannatech, Inc. Coppell, Texas |
| 1995 to 1996 | Scientific Consultant Mannatech, Inc. Coppell, Texas |
| 1987 to 1995 | Vice President Director of Research – Carrington Laboratories Irving, Texas |
| 1985 to 1990 | School Board Member Turnpike Christian School Grand Prairie, Texas |
| 1985 to 1989 | Director Prime Toxicology Laboratories, Inc. Dallas, Texas |
| 1983 to 1987 | Scientific Consultant Carrington Labs, Inc. Irving, Texas |
| 1983 to 1995 | Director Ahlfinger Water Company Dallas, Texas |
| 1979 to 1982 | Regional Toxicology Expert Environmental Protection Agency -- Region 6 Dallas, Texas |

| | |
|--------------|---|
| 1979 to 1995 | Adjunct Faculty Instructor in Pharmacology and Toxicology University of Texas Southwestern Medical Center at Dallas University of Texas Southwestern Medical School Dallas, Texas |
| 1978 to 1982 | Clinical Pharmacologist and Toxicologist Southwestern Institute of Forensic Sciences Dallas, Texas |
| 1977 to 1983 | Scientific Consultant Avacare, Inc. Dallas, Texas |
| 1975 to 1979 | Fellowship in Pharmacology and Toxicology U.T. Southwestern Medical School Dallas, Texas |
| 1974 to 1975 | Teaching Assistant U.T. Southwestern Medical School Dallas, Texas |
| 1972 to 1974 | Math Instructor Basic Adult Education, San Angelo College San Angelo, Texas |
| 1972 to 1973 | Chemistry Lab Assistant San Angelo State University San Angelo, Texas |
| 1971 to 1973 | Chemistry Teacher San Angelo ISD San Angelo, Texas |
| 1968 to 1970 | Math Teacher San Angelo Independent School District San Angelo, Texas |

EDUCATION

Bachelor of Science, (Chemistry-Math), 1968
Angelo State University
San Angelo, Texas

Master of Natural Science, (Chemistry-Biology), 1973
New Mexico Highlands University
Las Vegas, New Mexico

Ph.D. (Pharmacology-Toxicology), 1978
University of Texas Health Science Center
Dallas, Texas

Postdoctoral Training in Forensic and Clinical Toxicology, 1979-1981,
Dallas Institute of Forensic Science and University of Texas Southwestern
Medical School
Parkland Hospital, Dallas, Texas

THESIS TITLES

M.S.: Spectrophotometric Analysis of "Street Drugs"

Ph.D.: Effect of Lung Edema on the Pulmonary Uptake, Distribution and
Binding of Drugs

CONTINUING EDUCATION

New Animal Drug Applications
September 1987
Shotwell & Carr, Inc.,
Dallas, Texas

Microbiological Control Symposium
November 1987
Sponsored by Microbiological Update
Islamorada, Florida Keys

Good Manufacturing Procedures Training Seminar
December, 1987
Shotwell & Carr, Inc.
Dallas, Texas

Preparing Clinical Protocols and Managing Clinical Investigations
March, 1988
Center for Professional Advancement
Jamesburg, New Jersey

The Mechanics of Preparing IND Applications and NDAs
March, 1988
Center for Professional Advancement
Jamesburg, New Jersey

Microbiological Control Symposium
May 1988
Sponsored by Microbiological Update
Islamorada, Florida Keys

RAPS/FDA Seminar on Expedited Drug Approval
FDA Interim Rule for Expedited Development and Approval of Drugs for Life
Threatening Illnesses
February, 1989
Rockville, Maryland

RAPS/GCP -- (3MP, GLP: A Workshop on Drugs and Devices)
May 1989
Philadelphia, Pennsylvania

US/EC Pharmaceutical Law Forum
1990
Brussels, Belgium

Drug and Device Regulation: Progress and Controversy
February, 1993
Ft. Myers, Florida

Clinical Trial Issues of Topical Wound Healing Biologics
Sponsored by Center for Biologics Evaluation and Research Food and Drug
Administration.
April 22, 1993
Bethesda, Maryland

The Biotechnology Forum 1993.
"From Molecule to Market: The Business of Biotechnology"
Sponsored by International Business Forum
May 3, 1993
New York, New York

510 (k) Submissions

May, 1994

Shotwell & Carr

Dallas, Texas

Quality Leadership and Implementation Workshop

Hogan Quality Institute

October, 1994

Dallas, Texas

Good Manufacturing Practices

January, 1995

Shotwell & Carr

Dallas, Texas

Product Manager Seminar

March, 1995

Brakke and Associates, Inc.

Dallas, Texas

Fourth Nutraceutical Conference of the Foundation for Innovation in Medicine

"How to Develop, Make Claims on, and Market Nutraceuticals"

May, 1995

New York, New York

1996 IFT Annual Meeting Program & Food Expo Exhibit Directory

June 22-26

New Orleans, Louisiana

The Foundation for Innovation in Medicine,

"How to Develop, Make Claims on, and Market Nutraceuticals"

November, 1996

New York, New York

Regulatory Concerns for Natural Products

Industrial Laboratories

March 1, 1997

Denver, Colorado

Dietary Supplements -- Functional and Medical Foods for Chronic Diseases or Aging

Global Business Research Ltd.

March 10-11, 1997

Anaheim, California

PATENTS

1. December 16, 1987: Spanish Patent #556686, Un procedimiento para producir un gel o jugo de aloe sustancialmente exento de antraquinona
2. February 24, 1988: South African Patent #86/4744, Processes for preparation of aloe products, products produced thereby and compositions thereof
3. March 7, 1988: Spanish Patent #557820, Un procedimiento para extraer la sustancia quimica activa de la planta del aloe a partir de sus hojas
4. March 7, 1988: Spanish Patent #557821, Un procedimiento para extraer la sustancia quimica activa de la planta del aloe a partir de sus hojas
5. March 30, 1988: Spanish Patent #557759, Un procedimiento para extraer la sustancia quimica activa de la planta del aloe a partir de hojas de esta planta
6. March 31, 1988: OAPI (African) Patent #08487, Process for preparation of aloe products, products produced thereby and compositions thereof
7. April 5, 1988: U.S. #4735935, Process for preparation of aloe products, products produced thereby and compositions thereof
8. June 15, 1988: Portuguese Patent #82.862, Processo para a preparacao de productos de aloes e de composicoes farmaceuticas que os contem
9. September 23, 1988: Peruvian Patent #4382, Procedimiento para la preparacion de productos de aloe y otros derivados
10. December 15, 1988: New Zealand Patent #216663, Processes for preparation of aloe products, products produced thereby and compositions thereof
11. July 11, 1989: U.S. #4846170, Gas Delivery Apparatus Protection Device
12. July 25, 1989: U.S. #4851224, Process for preparation of aloe products
13. July 29, 1989: Dominican Republic Patent #4582, Procedimientos para la preparacion de productos de aloe y otros derivados
14. April 17, 1990: U.S. #4917890, Processes for preparation of aloe products, products produced thereby and composition thereof

15. August 30, 1989: Belgian, Swiss/Lichenstein, French, British, Italian, Luxembourg, Dutch, Swedish, Austrian and German Patent #0227806, Processes for preparation of aloe products, products produced thereby and compositions thereof
16. September 18, 1990: U.S. #4957907, Processes for preparation of aloe products
17. August 29, 1990: South African Patent #889733, Process for preparation of aloe products
18. September 2, 1990: U.S. #4959214, Process for preparation of aloe products, products produced thereby and composition thereof
19. October 30, 1990: U.S. #4966892, Processes for preparation of aloe products, products produced thereby and compositions thereof
20. August 1, 1991: Australian Patent #607681, Processes for preparation of aloe products, products produced thereby and compositions thereof
21. April 21, 1992: U.S. #5106616, Administration of Acemannan
22. June 2, 1992: U.S. #5118673, Uses of aloe products
23. July 21, 1992: Canadian #1205475, Processes for preparation of aloe products, products produced thereby and compositions thereof
24. January 19, 1993: Canadian #1312860, McAnalley BH, Process for preparation of aloe products
25. February 8, 1994: U.S. #5284833, Wound Cleanser
26. April 25, 1995: U.S. #5409703, Dried hydrogel from hydrophilic-hygroscopic polymer
27. August 15, 1995: U.S. #5441943, Uses of aloe products
28. August 22, 1995: U.S. #5443830, Drink containing mucilaginous polysaccharides; and its preparation
29. November 21, 1995: U.S. #5468737, Wound healing accelerated by systemic administration of polysaccharide from aloe

Mannatech – Ambrotose Patents

| Country | Patent No. | Date Allowed | Date Granted | H&B Ref. |
|-------------------|--------------|---|--------------------|----------|
| Australia | 734183 | April 11, 2001 | September 20, 2001 | 23100.11 |
| Australia (Div) | | July 6, 2004 | | 23100.39 |
| EPC | 923382 | May 22, 2001 - Notice of Intention to Grant April 18, 2002 – Decision to Grant | May 29, 2002 | 23100.17 |
| Hong Kong | 1020531 | None. | October 18, 2002 | 23100.18 |
| Malaysia | MY117459A | November 17, 2003 | June 30, 2004 | 23100.22 |
| Mexico | 212260 | November 22, 2002 – LTFA reporting allowance | December 18, 2002 | 23100.23 |
| New Zealand | 334021 | January 22, 2001 – LTC reporting allowance | May 10, 2001 | 23100.24 |
| New Zealand (Div) | | October 12, 2004 | | 23100.44 |
| Philippines | I-1997-57533 | November 28, 2003 | May 7, 2004 | 23100.54 |
| Singapore | 61367 | None. | April 17, 2001 | 23100.28 |
| South Africa | 97/7102 | March 9, 1998 – LTFA reporting acceptance | April 29, 1998 | 23100.30 |
| South Korea | 0450097 | August 27, 2004 | September 15, 2004 | 23100.31 |
| Taiwan | 191175 | October 7, 2003 | March 19, 2004 | 23100.32 |
| United States | | June 15, 2004 | | 23100.36 |

| Country | Patent No. | Description |
|-------------------|------------|--|
| United States | 5961957 | Barrier foam for the protection of the skin from water, allergens poor other skin irritants |
| United States | 5786342 | Use of acetylated mannan (I) to reduce symptoms associated with chronic respiratory disease such as itching, burning, congestion, watering of mucosal membranes, sinus headaches produced by swollen nasal mucosa, wheezing, coughing, bronchitis, tightness in the chest and difficulty in breathing |
| United States | 5780453 | Reduction of symptoms of multiple sclerosis (MS), comprises administering an acetylated polymeric to reduce plaque formation |
| Australia | 734183 | Dietary supplement comprising saccharides – to supply mammals with glycoproteins |
| EPC | 923382 | |
| Switzerland | 923382 | |
| Germany | 69712896 | |
| Spain | 923382 | |
| France | 923382 | |
| Great Britain | 923382 | |
| Ireland | 923382 | |
| Italy | 923382 | |
| Mexico | 212260 | |
| Austria | 218065 | |
| Hong Kong | 1020531 | |
| Republic of Korea | 0450097 | |
| New Zealand | 334021 | |
| Taiwan | 191175 | |
| South Africa | 9707102 | |
| Malaysia | 117459 | |
| Singapore | 61367 | |
| United States | 5703060 | Methods for (a) preventing an animal from being infected by an infectious organism, (b) treating fungal infestations in an animal and (c) treating infections in an animal resistant to an anti-infectious drug comprise administering an acetylated mannan derivative preferably Acemannan |
| United States | 5902796 | Production of factor from aloe – comprises filtering an aloe vera leaf or a product derived and produced therefrom, then sizing using different processes |
| Australia | 734450 | |
| Republic of Korea | 419354 | |
| United States | 5587364 | Methods for (a) treating an animal suffering from an inflammatory bowel disease, (b) reducing inflammatory symptoms associated with in autoantibody disease in an animal, (c) reducing inflammation within the nervous system in an animal and (d) treating the stings, bites and scratches of animals and pricks and scratches of plants comprise administering of an acetylated mannan derivative of aloe origin |
| United States | 5512488 | The presence or amount of a bioactive polysaccharide (A) in a product is detected and confirmed by: (1) treating a first portion of the product with a colorimetric complexing agent (B1) and determining the colour change that occurs; (2) comparing the |

| Country | Patent No. | Description |
|-------------------|------------|---|
| | | result with standard colour changes produced by reacting (B1) with various known amounts of (A); (3) repeating the procedure, on a separate sample, with a second colorimetric complexing agent (B2) to confirm the result of the test with (B1). Also claimed is a similar method, using only (B1), to determine presence/amount of aloe vera polysaccharide |
| United States | 5468737 | Healing of wounds in animals is promoted and accelerated by systemic administration of a bioactive polymeric mannan deriv |
| United States | 5441943 | Methods for (a) regulating blood cholesterol levels in an animal and (b) regressing (sic) plaques formed in blood vessels of an animal comprise administering of a polymeric acetylated mannan deriv |
| United States | 5443830 | Drink containing mucilaginous polysaccharide cpds. and water – obtd. by alcohol-pptn. of polysaccharide from aloe vera leaves, giving known quantity of Acemannan and no bitter after-taste |
| United States | 5409703 | Therapeutic device is a flexible solid foam of dried hydrogel (A) that can be cut to shape and has gas bubbles dispersed through it. It is made by removing, from a hydrogel, a liquid medium (in a dispersed phase) from particles of hydrophilic-hygroscopic therapeutic polymer (I) in a dispersion phase. The device is transformed into the hydrogel by absorption of additional liquid medium |
| Japan | 2992835 | |
| EPC | 705113 | |
| Republic of Korea | 343293 | |
| Austria | 218376 | |
| Germany | 69430746 | |
| United States | 5308838 | The following are claimed (A) enhancing the therapeutic effect of known pharmaceutical agents (which require the aid of the animal's immune system to achieve maximal drug efficacy) in animals comprising admin. to the animal of an acetylated mannan deriv., in addn. to the known pharmaceutical agent, to enhance the immunocompetency of the animal. (B) producing an innumenhancement effect of a vaccine comprising adding 0.001-10.0 mg. (per vaccine dose) of an acetylated mannan deriv. to the vaccine, (C) producing an immunoenhancement effect of a vaccine comprising (a) administering to the animal a vaccine antigen, and (b) separately administering a polymeric mannan derive |
| EPC | 611304 | Use of acetylated mannan derivs. e.g. Acemannan – as immunostimulants, for treating traumatic injuries, parasitic infections, inflammation etc. |
| Republic of Korea | 209180 | |
| Canada | 2122604 | |
| EPC | 965346 | |
| Germany | 69133298 | |
| Germany | 69131628 | |
| United States | 5284833 | Aq. would cleanser composition comprising surfactant, osmotic adjuster, buffering agent, water and opt. other ingredients, and is non-toxic and non-irritating |
| United States | 5118673 | An antiviral effect in an animal or a tissue culture infected with a virus is produced by administering to the animal or culture an amount of an acetylated mannan derivative sufficient to inhibit the replication of the virus, pref. Acemannan |
| United States | 5106616 | Production of interleukin-1 (IL-1) and prostaglandin E2 (PGE2) by mammalian monocyte or macrophage peripheral blood adherent cells is activated, induced or enhanced by treating the mammal with enough Acemannan (I) to stimulate such cells. Other claimed activities of (I) are (1) stimulating |
| Australia | 637985 | |
| EPC | 382840 | |
| Canada | 1336581 | |
| Japan | 2888249 | |

| Country | Patent No. | Description |
|-------------------|------------|---|
| EPC | 619117 | phagocytosis by the specified cells; (2) antiviral activity; (3) altering viral replication metabolism in infected cells (in vivo and in seed cultures for vaccine production); (4) producing an adjuvant effect in vaccines; (5) antitumour action; (6) producing altered glycoproteins in infected cells; (7) increasing intra- and extra-cellular production of mannose and (8) reducing symptoms of multiple sclerosis and inflammatory bowel disease |
| United States | 4851224 | Extracting of pharmaceutically active polysaccharide from aloe plant leaf – by obtaining aloe juice containing acetylated beta-D-mannose polymer with D-galacto-pyranose branching, adjusting pH, adding solvent, etc. |
| Canada | 1312860 | |
| EPC | 356484 | |
| Republic of Korea | 9301062 | |
| Japan | 2832551 | |
| United States | 4735935 | Composition comprising a non-degradable lyophilized ordered linear polymer of acetylated mannose monomers is new. Composition comprising an EtOH pptn. prod. of juice of the aloe vera plant, the prod. being non-degradable and in lyophilized form, is new. Similar compositions obtained from the juice of the aloe ferox, Africana or dichotoma plants are also new |
| EPC | 227806 | |
| Canada | 1305475 | |
| EPC | 328775 | |
| Japan | 95091198 | |
| Ireland | 9565367 | |
| Austria | 45880 | |
| Australia | 607681 | |
| Germany | 3665262 | |
| Germany | 3689195 | |
| Germany | 68910051 | |
| Germany | 68920019 | |
| Germany | 68929208 | |
| Mexico | 164570 | |
| Mexico | 168996 | |
| United States | 4917890 | |
| United States | 4957907 | |
| United States | 4959214 | |
| United States | 4966892 | |
| United States | 5773425 | |
| United States | 4846170 | Gas delivery apparatus protection device |

REGULATORY SUBMISSIONS

September 28, 1989: 510(k)
FDA Office of Device Evaluation

May 25, 1990: 510(k)
FDA Office of Device Evaluation

June 7, 1990

Received ODE approval to market Carrington Wound Dressing as a device with label claims for 1st and 2nd degree burns, pressure ulcers, stasis ulcers and skin conditions associated with peristomal care

October 30, 1990

Submitted IND 3HP904468 to the Canadian HPB
In support of studies of oral Acemannan in advanced AIDS
Studies were allowed to begin 60 days later

November 30, 1990

Office of Device Evaluation approval to market
Carrington Dermal Wound Gel as a device

November 1, 1991

Received Conditional Approval from USDA for Acemannan
Immunostimulant for the management and treatment (i.e., surgery) of
fibrosarcoma in cats and dogs

November 1, 1991

Received United States Veterinary Biologics Establishment
License from USDA

July 15, 1992

Submitted IND 40107
In support of studies of Acemannan for injection in AIDS
Studies were allowed to begin 30 days later

October 8, 1991

Submitted IND 37945
In support of studies of oral Acemannan in ulcerative colitis
Studies were allowed to begin on December 1, 1992

July 30, 1993

Carrasyn D filed CD
Cleared by ODE, May 4, 1994

September 9, 1994

Carrasyn FCIG filed
Cleared by ODE, November 29, 1994

HONORS

Dean's List, Angelo State University
Phi Kappa Phi Honor Society
Phi Delta Kappa Fraternity
Merit Award, Professional Contribution in Mathematics
Summa Cum Laude, New Mexico Highlands University, Las Vegas, New Mexico
Biography in Outstanding Young Men of America, 1973
Bell & Howell Outstanding Teacher Award
NSF Fellowship
NIH Fellowship

AREAS OF SPECIALIZATION

- Absorption, distribution, excretion and metabolism of pharmacologic agents
- Principles of toxicology
- Pulmonary drug distribution in normal and damaged lungs
- Clinical and forensic toxicology
- Inhalation toxicology
- Environmental toxicology
- Pharmacology of natural plant products
- Patent and regulatory requirements for new drugs and dietary supplements
- Development of dietary supplements
- Research on glyconutritional supplements
- Research on *Aloe vera* (L.) Burm. f.

ACADEMIC RESEARCH PROJECTS

Fast qualitative and quantitative determination of "Street Drugs" with Dr. Monte Carlo

Effect of lung damage on the pulmonary absorption of drugs

Effect of pulmonary edema and fibrosis on the absorption, uptake, efflux and binding of drugs in the lung

The toxic properties of "Laetrile"

Pharmacology of natural substances

Transport mechanisms in pulmonary endothelium

Human tissue culture – normal and cancerous

Effect of natural substances in human tissue cultures

Pharmacokinetics in humans

RESEARCH SUPPORT

| | |
|--------------|--|
| 1970 to 1973 | National Science Foundation Fellow and Grantee |
| 1974 | University of Texas Southwestern Medical Center at Dallas Teaching assistant Dallas, Texas |
| 1974 to 1978 | National Institutes of Health (NIH) fellowship and grantee under the pharm-tox training program at Southwestern Medical School of Dallas |
| 1979 | University of Texas Health Science Center of Dallas Private research funds to study the toxicity of "Laetrile" |
| 1980 to 1981 | Co-investigator on a National Institutes of Health grant awarded by the National Heart, Lung and Blood Institute Grant number 1 ROH1 HL 20623 project title "Transport Mechanisms in Pulmonary Endothelium" |

PROFESSIONAL SOCIETY MEMBERSHIPS

American Chemical Society
Association of Official Analytical Chemists

PROFESSIONAL ACTIVITIES

| | |
|--------------|---|
| 1968 to 1970 | Worked with a team of mathematicians to develop and test a series of programmed math tests for Grades 1-12 (sponsored by the Ford Foundation and distributed nationally) |
| 1970 to 1971 | Developed and published a math program for the handicapped (Sponsored by the Education for the Handicapped Act, Part B, State Project Number 1-66-15-33) |

- 1971 Assisted Dr. Michael Carlo in developing assays for "Street Drugs"
Angelo State University
San Angelo, Texas
- 1973 Presented research paper at the Texas Academy of Science
Houston, Texas
- 1973 to 1974 Directed a project in San Angelo, Texas, using chemical and biological tests to locate sites of sewage leading into the city water supply. The same procedure was used to locate underground oil contamination in Garden City, Texas. The results were televised and corrective action was taken.
- 1975 Worked on the Role and Scope Committee for the Growth of the Graduate School at UTHSCD
- 1975 Attended the Role and Scope retreat for the School of Graduated Studies for the Growth of the Graduate School at UTHSCD
- 1975 to 1976 Served as pharmacology student representative to the Graduate Executive Council
- 1976 to 1977 Served as vice president of the Graduate Executive Council
- 1977 Presented research paper at the Texas Pharmacology Meeting
Galveston, Texas
- 1977 Presented research paper at FASEB
Chicago, Illinois
- 1978 Presented research paper at FASEB
Atlantic City, New Jersey
- 1978 Presented research paper at the Southwestern Association of Toxicologists
San Antonio, Texas
- 1979 Presented research paper at the Texas Academy of Science,
Arlington, Texas

- 1979 Presented research paper at the Southwestern Association
of Toxicologists
Albuquerque, New Mexico
- 1979 Presented research paper at the Southwestern Association
of Toxicologists
Houston, Texas
- 1980 Presented a research paper at the Southwestern Association
of Toxicologists
Bossier City, Louisiana
- 1980 Participated in Chemlearn, a computer assisted program
which teaches the user how to search CHEMLINE, a data
base of the National Library of Medicine (Knowledge of
CHEMLINE is important when accessing TOX-LINE and
other National Library of Medicine databases)
- 1980 Assisted EPA Region VII in developing actions on the dioxin
wastes at the Veronal farm site in Aurora, Missouri, by
speaking at the town meeting
- 1980 Served as guest lecturer at the Texas/Southwestern
Conference- Manufacturing Division
Dallas, Texas
- 1981 Presented a program on "Water Quality" to the League of
Women Voters
Denton, Texas
- 1981 Lectured on Toxicology, Water and Food to the Louisiana
Environmental Health Association
Lake Charles, Louisiana
- 1981 Lectured on the health effects of toxic materials as guest
speaker of the Hazardous Waste Management Program
University of Southwestern Louisiana
- 1981 Spoke on industrial toxicology at the Water Utilities Short
School Laboratory Technology session
University of Texas
Arlington, Texas
- 1981 Presented a toxicology three-day seminar to state and
federal employees from Texas, Louisiana, Arkansas, New
Mexico and Oklahoma

- 1981 Participated in a three-day seminar entitled "Childhood Lead Toxicity Issues and Constraints,"
New Orleans, Louisiana
- 1981 Attended the International Symposium on Chlorinated Dioxins and Related Compounds
Arlington, Virginia
- 1982 Presented a faculty and student seminar on Environmental Toxicology
University of Texas at Dallas
- 1982 Assisted the Texas Air Control Board in finding causes of skin rashes in the Deer Park Area, Houston, Texas
- 1982 Participated as panel member of a symposium on lead poisoning at U.T. Southwestern Medical School
- 1982 Presented analytical findings on natural products to National Nutritional Food Association meeting in Florida
- 1983 Assisted in development of Avacare College for the study of health and beauty aids
- 1983 Presented a paper on Aloe vera at the 45th Annual National Nutritional Foods Association Convention and Trade Show
Denver, Colorado
- 1983 Assisted in the development of the Carrington Dermal Wound Treatment System
- 1984 Helped develop a training program and manual for salesmen to use in selling the Carrington Dermal Wound Treatment System
- 1985 Presented over thirty seminars on water purification in the United States and Canada
- 1985 Spoke at the Regional Conventions of Avacare College
- 1985 Taught skin and hair physiology at the Avacare College
- 1985 Spoke on physiology of the skin and the effects of aesthetic treatment, sponsored by American Institute of Esthetics
Long Beach, California

- 1988 Attended 102nd AOAC Annual International Meeting and
Exposition
Palm Beach, Florida
- 1988 Attended 67th Annual Meeting
Texas Society of Pathologists
Galveston, Texas
- 1989 Lectured on Poisons and Antidotes to Physician's
Assistants
U.T. Southwestern Medical School
Dallas, Texas
- 1990 Spoke at the 9th Annual International Aloe Science Council
DFW Marriott
Grapevine, Texas
- 1990 Attended EEC Pharmaceutical Law Forum
Royal Windsor Hotel
Brussels, Belgium
- 1991 Attended 1st European Tissue Repair Society Meeting, " New
Insights"
Oxford University
United Kingdom
- 1991 Attended FASEB Summer Research Conference
"Modulation of Wound Healing"
Saxton River, Vermont
- 1991 Attended the Symposiums on Advanced Wound Care
New Orleans, Louisiana
- 1992 Lectured on Poisons and Antidotes to Physician's
Assistants
U.T. Southwestern Medical School
Dallas, Texas
- 1992 Toxicology lecture to Physician's Assistants
U.T. Southwestern Medical School
Dallas, Texas
- 1994 Lectured to the International Aloe Science Council

- 1993 Toxicology lecture to Physician's Assistants
 U.T. Southwestern Medical School
 Dallas, Texas
- 1996 Presented "The Many Potential Benefits of Aloe
 Polymannose (Manapol)."
 Second Annual International Congress on Alternative &
 Complementary Medicine
 Alexandria, Virginia

PUBLICATIONS

Books and Book Chapters

1. McAnalley BH, Eddy L. A Continuous Progress Program in Mathematics.
Angelo School System, 1970.
2. McAnalley BH, Donoho D. Mathematics for the Handicapped. Texas
Region XV, 1971.
3. McAnalley BH. Poisons and antidotes. IN: Goth's Medical Pharmacology:
Twelfth Edition. Clark WG, et al. (eds) 1988. Mosby Year Book. St. Louis.
4. McAnalley BH. Drug concentrations in blood: 1) Therapeutic drug
concentrations and 2) Toxic and lethal blood concentrations. IN: Goth's
Medical Pharmacology: Twelfth Edition. Clark WG, et al. (eds) 1988.
Mosby Year Book. St. Louis.
5. McAnalley BH. Chemistry of alcoholic beverages. IN: Medicolegal
Aspects of Alcohol Determination in Biological Specimens. Garriott JC
(ed). PSG Publishing Company. Littleton, Massachusetts, 1988.
6. McAnalley BH. Poisons and antidotes. IN: Goth's Medical Pharmacology:
Thirteenth Edition. Clark WG, et al. (eds) 1992. The C.V. Mosby Co. St.
Louis.
7. McAnalley BH. Drug concentrations in blood: 1) Therapeutic drug
concentrations and 2) Toxic and lethal blood concentrations. IN: Goth's
Medical Pharmacology: Thirteenth Edition. Clark WG, et al. (eds) 1992.
The C.V. Mosby Co. St. Louis.

8. McAnalley BH. Chemistry of alcoholic beverages. IN: Medicolegal Aspects of Alcohol Determination in Biological Specimens. Second Edition. Garriott JC (ed.). Lawyers & Judges Publishing Co. Inc. Tucson, Arizona, 1993.
9. McAnalley BH. Chemistry of alcoholic beverages. IN: Medicolegal Aspects of Alcohol. 3rd Edition. Garriott JC (ed.). Lawyers & Judges Publishing Co. Inc. Tucson, Arizona, 1996.
10. McAnalley BH. Chemistry of alcoholic beverages. IN: Medical-Legal Aspects of Alcohol. 4th Edition. Garriott JC (ed.). Lawyers & Judges Publishing Co. Inc. Tucson, Arizona, 2003.
11. Gardiner TH, Vennum EP, McAnalley SA, McAnalley BH. Choices: Choosing the Right Dietary Supplements for Optimal Health—Which Ones, Why, and How Much? Talking Stick Publishing Corp. Grand Prairie, Texas 2004.

Additional Books and Book Chapters

The following publications were not done under my direction, but were a result of and a follow-up to, my work with acemannan.

1. Smalley RV, Oldham RK. Chemical inducers of lymphokines. IN: Principles of Cancer Biotherapy. Oldham RK. New York. Raven Press; 1987: 299-325
2. Tizard IR. Veterinary Immunology: An Introduction. W.B.Saunders Company. Harcourt Brace Jovanovich, Inc.; 1992.
3. Roitt IM, Peter J.Delves. Drugs that affect the immune system. Roitt IM, Delves PJ. Encyclopedia of Immunology. San Diego, CA, Academic Press, Inc. 1992: 447-456

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1. Gardiner TH, McAnalley BH. Species comparison of phenol red transport and binding in the mammalian lung. Gen Pharmacol. 1977;8(4):235-8. PMID: 590729 [PubMed - indexed for MEDLINE]

2. Gardiner TH, McAnalley BH. Effect of lung edema on the pulmonary absorption of drugs. Life Sci. 1978 Oct 30;23(17-18):1827-33. PMID: 723452 [PubMed - indexed for MEDLINE]
3. McAnalley BH, Lowry WT, Oliver RD, Garriott JC. Determination of inorganic sulfide and cyanide in blood using specific ion electrodes: application to the investigation of hydrogen sulfide and cyanide poisoning. Journal of Analytical Toxicology. 1979; 3:111.
4. Gardiner TH, McAnalley BH, Heaton J, Reynolds RC. Changes in the pulmonary uptake and binding of drugs in an experimental model of lung fibrosis. Toxicol Appl Pharmacol. 1979 Jul;49(3):487-96. PMID: 473215 [PubMed - indexed for MEDLINE]
5. Schulz WW, McAnalley WH, Reynolds RC. Freeze-fracture study of pulmonary lamellar body membranes in solid crystal phase. J Ultrastruct Res. 1980 Apr;71(1):37-48. PMID: 7373703 [PubMed - indexed for MEDLINE]
6. McAnalley BH, Gardiner TH, Garriott JC. Cyanide concentrations in blood after amygdalin (laetrile) administration in rats. Vet Hum Toxicol. 1980 Dec;22(6):400-2. PMID: 7210468 [PubMed - indexed for MEDLINE]
7. Horadam VW, Sharp JG, Smilack JD, McAnalley BH, Garriott JC, Stephens MK, Prati RC, Brater DC. Pharmacokinetics of amantadine hydrochloride in subjects with normal and impaired renal function. Ann Intern Med. 1981 Apr;94(4 pt 1):454-8. PMID: 7212501 [PubMed - indexed for MEDLINE]
8. Daniel DR, McAnalley BH, Garriott JC. Isopropyl alcohol metabolism after acute intoxication in humans. J Anal Toxicol. 1981 May-Jun;5(3):110-2 PMID: 7265921 [PubMed - indexed for MEDLINE]
9. Heaton JD, McAnalley BH, Gardiner TH, Johnson AR. Uptake and release of ¹⁴C-morphine by pulmonary endothelium and cultured pulmonary endothelial cells. Gen Pharmacol. 1982;13(2):105-10. PMID: 7095389 [PubMed - indexed for MEDLINE]
10. Kurt TL, McAnalley BH, Garriott JC. Organic lead encephalopathy from gasoline sniffing in an adolescent. Texas Medicine. 1982; 78:52-54.
11. McAnalley BH, Garriott JC, Daniel DR, McAnalley ER. Unusual elimination of ethyl alcohol: a comparison of infants with adults. Journal of the American Medical Association. 1983.

12. Danhof IE, McAnalley BH. Stabilized aloe vera: effect on human skin cells. Drug and Cosmetic Industry, August, 1983.
13. Lewis GD, Laufman AK, McAnalley BH, Garriott JC. Metabolism of acetone to isopropyl alcohol in rats and humans. J Forensic Sci. 1984 Apr;29(2):541-9. PMID: 6726158 [PubMed - indexed for MEDLINE]
14. Northup L, Reed G, McAnalley B, Anderson RJ. Seizures due to maprotiline overdose. Ann Emerg Med. 1984 Jun;13(6):468-70. PMID: 6428280 [PubMed - indexed for MEDLINE]
15. McDaniel HR, McAnalley BH;. Evaluation of polymannoacetate (carrisin) in the treatment of aids. Clin Res. 1987; 35: 483A-
16. Tizard IR, Carpenter RH, McAnalley BH, Kemp MC. The biological activities of mannans and related complex carbohydrates. Mol Biother. 1989;1(6):290-6. PMID: 2692629 [PubMed - indexed for MEDLINE]
17. Johnson AR, White AC, McAnalley BH. Comparison of common topical agents for wound treatment: cytotoxicity for human fibroblasts in culture. Wounds: A Compendium of Clinical Research and Practice. 1989; 1 (3):186-192.
18. Manna S, McAnalley BH. Evidence of acetyl migration during methylation of alcohol with diazomethane-goron trifluoride etherate: 6-O-methyl-D-mannose revisited. Carbohydrate Research. 1991; 222:261-265.
19. Kahlon JB, Kemp MC, Carpenter RH, McAnalley BH, McDaniel HR, Shannon WM. Inhibition of AIDS virus replication by acemannan *in vitro*. Mol Biother. 1991 Sep;3(3):127-35. PMID: 1768365 [PubMed - indexed for MEDLINE]
20. Kahlon JB, Kemp MC, Yawei N, Carpenter RH, Shannon WM, McAnalley BH. *In vitro* evaluation of the synergistic antiviral effects of acemannan in combination with azidothymidine and acyclovir. Mol Biother. 1991 Dec;3(4):214-23. PMID: 1662957 [PubMed - indexed for MEDLINE]
21. Fogleman RW, Shellenberger TE, Balmer MF, Carpenter RH, McAnalley BH. Subchronic oral administration of acemannan in the rat and dog. Vet Hum Toxicol. 1992 Apr;34(2):144-7. PMID: 1509675 [PubMed - indexed for MEDLINE]
22. Fogleman RW, Chapdelaine JM, Carpenter RH, McAnalley BH. Toxicologic evaluation of injectable acemannan in the mouse, rat and dog. Vet Hum Toxicol. 1992 Jun;34(3):201-5. PMID: 1609484 [PubMed - indexed for MEDLINE]

23. Manna S, McAnalley BH. Determination of the position of the o-acetyl group in a beta-(1-->4)-mannan (acemannan) from aloe barbadensis miller. Carbohydrate Research. 1993 Mar 17;241:317-9. PMID: 8472257 [PubMed - indexed for MEDLINE]
24. Manna S, McAnalley BH, Ammon HL. 2,3,4-Tri-O-acetyl-1,6-anhydro-beta-D-mannopyranose, an artifact produced during carbohydrate analysis. A total synthesis of 2,3,5-tri-O-acetyl-1,6-anhydro-beta-D-mannofuranose. Carbohydrate Research. 1993 Apr 23;243(1):11-27. PMID: 8324757 [PubMed - indexed for MEDLINE]
25. King GK, Yates KM, Greenlee PG, Pierce KR, Ford CR, McAnalley BH, Tizard IR. The effect of acemannan Immunostimulant in combination with surgery and radiation therapy on spontaneous canine and feline fibrosarcomas. J Am Anim Hosp Assoc. 1995 Sep-Oct;31(5):439-47. PMID: 8542364 [PubMed - indexed for MEDLINE]
26. Gauntt C, Busbee D, Wood HJ, Reyna S, Barhoumi R, Burghardt R, McAnalley W, McDaniel HR. A glyconutritional mixture (Ambrotose®) provides some amelioration to mice with coxsackievirus-induced pancreatitis. Age. 1999; 22:149-158.
27. McAnalley B, Vennum E. Introduction to glyconutritionals. Glycoscience and Nutrition. 2000 Jan 1; 1(1).
28. Gauntt, CJ, Wood HJ, McDaniel HR, McAnalley BH. Aloe polymannose enhances anti-coxsackievirus antibody titres in mice. Phytother Res. 2000 Jun;14(4):261-6. PMID: 10861969 [PubMed - indexed for MEDLINE]
29. Gauntt C, McAnalley B, McDaniel R. Glyconutritionals: implications for recovery from viral infections. Glycoscience and Nutrition. 2001 Jan 26; 2(2).
30. Ramberg J, McAnalley B. Is saccharide supplementation Necessary. Glycoscience and Nutrition. 2002 May 1; 3(3).
31. McAnalley B, Dykman R, Dykman K, Hall J. An interpretation of the effects of a single dose of a glyconutritional supplement on the brain function of healthy college students, including a review of brainwave function. Glycoscience and Nutrition. 2002 Jul 1; 3(4).
32. Ramberg J, McAnalley B. From the farm to the kitchen table: a review of the nutrient losses in foods. Glycoscience and Nutrition. 2002 Sep 1; 3(5).

33. Koepke CM, McAnalley S, Le L, Vennum E, McAnalley B. *In vitro* methods for testing antioxidant potential: a review. Glycoscience and Nutrition. 2003 Mar 1; 4(2).
34. Koepke CM, McAnalley S, Le L, Vennum E, McAnalley B. Results of clinical trials with antioxidants: a review. Glycoscience and Nutrition. 2003 May 1; 4(3).
35. Boyd S, Gary K, Koepke C, McAnalley S, Ford C, Horn E, McAnalley B. An open-label study of the antioxidant effect in healthy people of Ambrotose AO(™). Glycoscience and Nutrition. 2003 Sep 1; 4(6).
36. Eberendu AR, Luta G, Edwards JA, McAnalley BH, Davis B. Quantitative colorimetric analysis of aloe polysaccharides as a measure of aloe vera quality in commercial products. Journal of AOAC International. 2005; 88(3):684-691.
37. Luta G, McAnalley B. Aloe vera: Chemical composition and methods used to determine its presence in commercial products. Glycoscience and Nutrition. 2005 Jul 1; 6(4).

Additional Peer-Reviewed Manuscripts

The research for the below publications was done under my direction and supervision while I was Vice President of Research and Development for Carrington Laboratories.

1. Cuttino C: Pyoderma gangrenosum: an innovative wound care protocol. J Enterostom Ther. 1987
2. Womble D, Helderman JH. Enhancement of allo-responsiveness of human lymphocytes by acemannan (Carrisyn). Int J Immunopharmacol. 1988; 10: 967-974.
3. Clumeck N, Hermans P. Antiviral drugs other than zidovudine and immunomodulating therapies in human immunodeficiency virus infection. An overview. Am J Med. 1988 Aug; 85: 165-172.
4. Sheets MA, Unger BA, Giggelman GF, Tizard IR. Studies of the effect of acemannan on retrovirus infections: clinical stabilization of feline leukemia virus-infected cats. Mol Biother. 1991 Mar; 3: 41-45.

5. Peng SY, Norman J, Curtin G. Decreased mortality of Norman murine sarcoma in mice treated with the immunomodulator, acemannan. Mol Biother. 1991 Jun; 3: 79-87.
6. Tizard I. Use of immunomodulators as an aid to clinical management of feline leukemia virus-infected cats. J Am Vet Med Assoc. 1991 Nov; 199: 1482-1485.
7. Harris C, Pierce K, King G, Yates KM, Hall J, Tizard I. Efficacy of acemannan in treatment of canine and feline spontaneous neoplasms. Mol Biother. 1991 Dec; 3: 207-213.
8. Chinnah AD, Baig MA, Tizard IR, Kemp MC. Antigen dependent adjuvant activity of a polydispersed beta-(1,4)-linked acetylated mannan (acemannan). Vaccine. 1992; 10: 551-557.
9. Swaim SF, Ridell KP, McGuire JA. Effects of topical medications on the healing of open pad wounds in dogs. J Am Anim Hosp Assoc. 1992; 28: 499-502.
10. Womble D, Helderman JH. The impact of acemannan on the generation and function of cytotoxic T-lymphocytes. Immunopharmacol Immunotoxicol. 1992; 14: 63-77.
11. Yates KM, Rosenberg LJ, Harris CK. Pilot study of the effect of acemannan in cats infected with feline immunodeficiency virus. Vet Immunol Immunopathol. 1992 Dec; 35: 177-189.
12. Kent EM. Use of an immunostimulant as an aid in treatment and management of fibrosarcoma in three cats. Feline Practice. 1993; 21:
13. Lindblad WJ, Thul J. Temporal levels of inflammatory cell marker enzymes in PVA implants following implantation in the rat. Wound Repair and Regeneration. 1993; 1: 113-113.
14. Lindblad WJ, Thul J. Enhanced deposition of collagen within acemannan« impregnated PVA sponges implanted in the rat. Wound Repair and Regeneration. 1993; 1: 113-113.
15. Marshall GD. *In vitro* stimulation of NK activity by acemannan (ACM). J Immunol. 1993; 150: 1381-
16. Tizard IR, Kemp MC. Acceleration of wound healing in healthy young rats by systemic administration of acemannan, a macrophage stimulant. Wound Healing Society. 1994; San Francisco, Ca.:

17. Plemons JM, Rees TD, Binnie WH, Wright JH, Guo I, Hall JE. Evaluation of acemannan in the treatment of recurrent aphthous stomatitis. Wounds. 1994 Mar; 6: 40-45.
18. Azghani AO, Williams I, Holiday DB, Johnson AR. A beta-linked mannan inhibits adherence of *Pseudomonas aeruginosa* to human lung epithelial cells. Glycobiology. 1995 Feb; 5: 39-44.
19. Karaca K, Sharma JM, Nordgren R. Nitric oxide production by chicken macrophages activated by acemannan, a complex carbohydrate extracted from *Aloe vera*. Int J Immunopharmacol. 1995 Mar; 17: 183-188.
20. Egger SF, Brown GS, Kelsey LS, Yates KM, Rosenberg LJ, Talmadge JE. Studies on optimal dose and administration schedule of a hematopoietic stimulatory beta-(1,4)-linked mannan. Int J Immunopharmacol. 1996 Feb; 18: 113-126.
21. Montaner JS, Gill J, Singer J. Double-blind placebo-controlled pilot trial of acemannan in advanced human immunodeficiency virus disease. J Acquir Immune Defic Syndr Hum Retrovirol. 1996 Jun; 12: 153-157.
22. Ramamoorthy L, Kemp MC, Tizard IR. Acemannan, a beta-(1,4)-acetylated mannan, induces nitric oxide production in macrophage cell line RAW 264.7. Mol Pharmacol. 1996 Oct; 50: 878-884.
23. Zhang L, Tizard IR. Activation of a mouse macrophage cell line by acemannan: the major carbohydrate fraction from *Aloe vera* gel. Immunopharmacology. 1996 Nov; 35: 119-128.
24. Egger SF, Brown GS, Kelsey LS, Yates KM, Rosenberg LJ, Talmadge JE. Hematopoietic augmentation by a beta-(1,4)-linked mannan. Cancer Immunol Immunother. 1996 Dec; 43: 195-205.
25. Stuart RW, Lefkowitz DL, Lincoln JA. Upregulation of phagocytosis and candidicidal activity of macrophages exposed to the immunostimulant acemannan. Int J Immunopharmacol. 1997 Feb; 19: 75-82.
26. Robinson M. Optimizing therapy for inflammatory bowel disease. Am J Gastroenterol. 1997 Dec; 92: 12S-17S.
27. Usinger WR. A comparison of antibody responses to veterinary vaccine antigens potentiated by different adjuvants. Vaccine. 1997 Dec; 15: 1902-1907.
28. Robinson M. Medical therapy of inflammatory bowel disease for the 21st century. Eur J Surg Suppl. 1998; 90-98.

29. Thomas DR, Goode PS, LaMaster K, Tennyson T. Acemannan hydrogel dressing versus saline dressing for pressure ulcers. A randomized, controlled trial. Adv Wound Care. 1998 Oct; 11: 273-276.

The following publications were not done under my direction, but were requested of, and a follow-up to, my work with acemannan.

1. Rodriguez-Bigas M, Cruz NI, Suarez A. Comparative evaluation of aloe vera in the management of burn wounds in guinea pigs. Plast Reconstr Surg. 1988 Mar; 81: 386-389.
2. McMullen D. Wound Healing. Nurs Clin Curr. 1990; 1-4.
3. Ritchie BW, Niagro FD, Latimer KS, Pritchard N, Greenacre C, Campagnoli RP, Lukert PD. Antibody response and local reactions to adjuvanted avian polyomavirus vaccines in psittacine birds. J Assoc Avian Vet. 1994; 8: 21-26.
4. Sharma JM, Karaca K, Pertile T. Virus-induced immunosuppression in chickens. Poult Sci. 1994 Jul; 73: 1082-1086.
5. Roberts DB, Travis EL. Acemannan-containing wound dressing gel reduces radiation-induced skin reactions in C3H mice. Int J Radiat Oncol Biol Phys. 1995 Jul 15; 32: 1047-1052.
6. Lee KY, Weintraub ST, Yu BP. Isolation and identification of a phenolic antioxidant from Aloe barbadensis. Free Radic Biol Med. 2000 Jan 15; 28: 261-265.

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1. McAnalley BH, Carlo M. Spectrophotometric determination of darvon. Texas Academy of Science, 1973.
2. McAnalley BH, Gardiner TH. Effects of lung edema on the pulmonary uptake, distribution and binding of benxylpenicillin and disodium cromoglycate in the rat. Federal Proclamation. 1977;36:1031.
3. McAnalley BH, Gardiner TH. Lung fluid and protein dynamics in alphanaphthylthiourea-induced lung edema. Fed. Proc. 1978;37:741.

4. Gardiner TH, McAnalley BH, Reynolds RC. Changes in the pulmonary uptake, binding and efflux of drugs in a model of chronic inflammatory lung disease. The Pharmacologist. 1978;30:198.
5. McAnalley BH, Garriott JC, Lowry WT. Tissue levels of cyanide and sulfide ions using ion electrodes. The Southwestern Association of Toxicologists, 1978.
6. McAnalley BH, Waldrum H, Gafford JT. Ion chromatography: comparison of equipment. AOAC Workshop in Dallas, 1985.
7. McDaniel HR, McAnalley BH. Evaluation of polymannoacetate (Carrisyn™) in the treatment of AIDS. Clinical Research. 1987;35:3.
8. McDaniel HR, Carpenter RH, McAnalley BH, St. John J. Identification of a gigantic circulating monocytic cell in warm blooded animals. New Orleans, Louisiana. ASCP Poster Session, October 1987.
9. Carpenter RH, McAnalley BH, McDaniel HR. The antiviral effect of polymannoacetate (Carrisyn™) on feline rhinotracheitis. New Orleans, Louisiana. ASCP Poster Session, October 1987.
10. McDaniel HR, Perkins S, McAnalley BH. A clinical pilot study using Carrisyn™ in the treatment of acquired immunodeficiency syndrome (AIDS). New Orleans, Louisiana. ASCP Poster Session, October 1987.
11. McDaniel HR, McAnalley BH, White AC. *In vitro* studies on polymannoacetate (Carrisyn™) for antiviral effect. New Orleans, Louisiana. ASCP Poster Session, October 1987.
12. McDaniel HR, McAnalley BH, Pulse T. An extended clinical pilot study utilizing acemannan in HIV patients. London, England. First International Conference on the Global Impact of AIDS, October 1987.
13. Eberendu A, McAnalley BH, Carpenter RH et al. Isolation and characterization of a new antiviral polysaccharide extracted from aloe barbadensis Miller. Galveston, Texas. Texas Society of Pathologists Scientific Poster Presentation, January 1988.
14. McDaniel HR, McAnalley BH, Carpenter AH. *In vitro* studies on acemannan (ACE-M) for antiviral effect. Galveston, Texas. Texas Society of Pathologists. Scientific Poster Presentation, January 1988.
15. Carpenter RH, McDaniel HR, McAnalley BH. *In vivo* antiviral effect of acemannan on feline rhinotracheitis. Galveston, Texas. Texas Society of Pathologists. Scientific Poster Presentation, January 1988.

16. Carpenter RH, McDaniel, HR, McAnalley BH. Acemannan demonstrated as an immune adjuvant for viral vaccinations of animals. Galveston, Texas. Texas Society of Pathologists. Scientific Poster Presentation, January 1988.
17. White A., McDaniel HR, McAnalley BH, Funderburk N. Antiviral action of acemannan in a measles infected cell line. Galveston, Texas. Texas Society of Pathologists. Scientific Poster Presentation, January 1988.
18. McDaniel HR, McAnalley BH, Carpenter RH, St. John J, White A. Identification of a gigantic circulating monocytic cell in warm-blooded animals given acemannan. Galveston, Texas. Texas Society of Pathologists. Scientific Poster Presentation, January 1988.
19. McDaniel, HR, McAnalley BH, Carpenter RH. The significance of identifying a gigantic circulating cell in the peripheral blood of warm-blooded animals. Galveston, Texas. Texas Society of Pathologists. Scientific Poster Presentation, January 1988.
20. McDaniel HR, St. John J, McAnalley BH, Carpenter RH. Inhibition of human t-cell lymphotropic virus *in vitro* by acemannan. Galveston, Texas. Texas Society of Pathologists. Scientific Poster Presentation, January 1988.
21. McDaniel HR, McAnalley BH, Helderman JH. Evaluation of acemannan in the treatment of acquired immunodeficiency syndrome patients. Galveston, Texas. Texas Society of Pathologists. Scientific Poster Presentation, Jan. 1988.
22. McDaniel HR, Perkins S, McAnalley BH. A clinical pilot study using acemannan treatment of 16 acquired immunodeficiency syndrome patients. Galveston, Texas. Texas Society of Pathologists. Scientific Poster Presentation, January 1988.
23. McDaniel HR, Pulse T, Watson T, McAnalley BH. Prediction and results obtained using oral acemannan in 41 symptomatic HIV patients. Galveston, Texas. Texas Society of Pathologists. Scientific Poster Presentation, Jan 1988.
24. McAnalley BH, McDaniel HR, Carpenter RH. Demonstration of *in vitro* antiviral action of acemannan against multiple viruses including the HIV virus. Stockholm, Sweden. IV International Conference on AIDS, June 1988.

25. McDaniel HR, Pulse T, Watson T, McAnalley BH. Prediction and results obtained using oral acemannan in 41 symptomatic HIV patients. Stockholm, Sweden. IV International Conference on AIDS, June 1988.
26. McAnalley BH, Carpenter RH. Acemannan-induced dysynthesis of HIV envelope glycoprotein. San Francisco, California. 8th International Symposium on Medical Virology, September 1988.
27. McDaniel HR, Pulse T, McAnalley BH et al. Clinical and objective evidence of a favorable response to acemannan treated HIV-1 patients. San Francisco, California. 8th International Symposium on Medical Virology, Sept. 1988.
28. Kemp MC, Chinnah AC, Tizard IR, Carpenter RH, McDaniel HR, McAnalley BH. Evidence for systemic immunomodulation by acemannan. Chateau Lake Louise, Alberta, Canada. 5th International Symposium on the Immunobiology of Proteins and Peptides, October 1988.
29. Kemp MC, Chinnah AC, McAnalley BH, McDaniel HR, Carpenter RH. Modification of viral glycoprotein synthesis by acemannan. Chateau Lake Louise, Alberta, Canada. 5th International Symposium on the Immunobiology of Proteins and Peptides, October 1988.
30. Carpenter RH, McAnalley BH. acemannan: A general antiviral having anti HIV-1 activity. Jerusalem, Israel. 16th International Congress of Chemotherapy, June 1989.
31. McAnalley BH, McDaniel HR, Carpenter RH. A unique agent of cell molecular language discrimination: acemannan induced dysynthesis of gp-120 HIV-1 envelope glycoprotein. Jerusalem, Israel. 16th International Congress of Chemotherapy, June 1989.
32. McDaniel HR, McAnalley BH, Carpenter RH. Objective evidence of a favorable clinical response to acemannan, a biologic, in HIV-1 patients. Jerusalem, Israel. 16th Intl. Congress of Chemotherapy, June 1989.
33. McDaniel HR, Pulse T, Kemp MC, McAnalley BH, Watson T, Carpenter RH. Prognostic criteria for evaluating the clinical efficacy of acemannan for the treatment of symptomatic HIV-1 positive patients. Houston, Texas. 29th Interscience Conference on Antimicrobial Agents and Chemotherapy, September 1989.
34. Kemp MC, Chinnah AD, McAnalley BH, Carpenter RH, McDaniel HR. Effect(s) of acemannan (Carrisyn™) on the replication of enveloped viruses, Houston, Texas. 29th Interscience Conference on Antimicrobial Agents and Chemotherapy, September 1989.

35. Kahlon JB, Kemp MC, McAnalley BH et al. Effect of acemannan on t-cell proliferation and HIV-1/LAV replication *in vitro*. Alberta, Canada. 6th International Conference on Comparative and Applied Virology: Virus Variability, Epidemiology and Control of Diseases, October 1989.
36. McDaniel HR, Combs CM, McDaniel HRex, Carpenter RH, Kemp MC, McAnalley BH. An increase in circulating monocyte/macrophage is induced by oral acemannan in HIV-1 patients. American Society of Clinical Pathologists Fall Meeting, Dallas, Texas, 1990.
37. Kemp MC, Kahlon JB, Chinnah AD, Carpenter RH, McAnalley BH, McDaniel HR, Shannon WM. *In vitro* evaluation of the antiviral effects of acemannan on the replication and pathogenesis of HIV-1 and other enveloped viruses; modification of the processing of glycoprotein presursors. Brussels, Belgium. Third International Conference on Antiviral Research, April 1990.
38. McDaniel HR, Carpenter RH, Kemp MC, Kahlon JB, McAnalley B. Extended survival and prognostic criteria for acemannan treated HIV-1 patients. Brussels, Belgium. 3rd Intl. Conference on Antiviral Research, April 1990.
39. McDaniel HR, Carpenter RH, Kemp MC, Kahlon JB, McAnalley BH. Extended treatment of HIV-1 patients with oral acemannan: an immune modulator. Peebles, Scotland. 6th International Symposium on Infections in the Immunocompromised Host, June 1990.
40. Kemp MC, Kahlon JB, Carpenter RH, McAnalley BH, McDaniel HR, Shannon WM. Concentration-dependent inhibition of AIDS virus replication and pathogenesis by acemannan *in vitro*. San Francisco, California. 6th International Conference on AIDS, June 1990.
41. McDaniel HR, Carpenter RH, Kemp MC, Kahlon JB, McAnalley BH. HIV-1- infected patients respond favorably to oral acemannan. San Francisco, California. 6th International Conference on AIDS, June 1990.
42. Chinnah AD, Kemp MC, Carpenter RH, McAnalley BH. Inhibition of newcastle disease virus replication and pathogenesis by acemannan *in vitro*. The University of Utah, Salt Lake City, The American Society for Virology, Annual Meeting, July 1990.

43. Kemp MC, Kahlon JB, Carpenter RH, McAnalley BH, Shannon WM. Inhibition of HIV-1 replication and pathogenesis by acemannan *in vitro*: altered glycosylation and processing of ENV precursor glycoproteins. Berlin, West Germany. VIIIth International Congress of Virology, August 1990.
44. McDaniel HR, Combs CM, McDaniel Hrex, Carpenter RH, Kemp MC, McAnalley BH. The numbers of circulating monocyte/macrophages in peripheral blood area of diagnostic significance. Dallas, Texas. American Society of Clinical Pathologists Fall Meeting, October 1990.
45. McDaniel HR, Combs CM, McAnalley BH, Kahlon JB. Examination of circulating macrophage/monocytes in routing hematology specimens and their significance in disease. Dallas, Texas. American Society of Clinical Pathologists Fall Meeting, October 1990.
46. Eberendu AR, McAnalley BH, McDaniel HR. Comparison of effectiveness of commercial wound cleansers using an artificial wound environment (AWE)* model, absorption spectrometry and gravimetry. Paper presented at Symposium on Advanced Wound Care. New Orleans, April 23-25 1991.
47. Carpenter RH, Yates KM, Busbee DL, King G, Tizard IR, McAnalley BH. Clinical applications of a biological response modifier (acemannan) in veterinary clinical medicine. Seoul, Korea. International Congress of Phytotherapy, October 1991.
48. Kemp MC, Kahlon JB, Chinnah AD, Yawei N, Carpenter RH, McDaniel HR, McAnalley BH. *In vitro* antiviral effects of a polydispersed b-(1,4)-linked mannan. Seoul, Korea. International Congress of Phytotherapy, Oct. 1991.
49. Eberendu AR, McAnalley BH, McDaniel HR. A comparison of the physiochemical properties and effectiveness of commercial wound cleansers. Abstract presented at the 8th Annual Scientific Sessions the Academy of Surgical Research, St. Charles, Illinois, September 1992.
50. McDaniel HR, Rosenberg LJ, McAnalley BH: CD4 and CD8 lymphocyte levels in acemannan (ACM)-treated HIV-1 infected long-term survivors. Presented at the IXth International Conference on AIDS, Berlin, Germany, June 6-11, 1993.
51. Kemp MC, Chinnah AD, Clark FD, Warnick RE, McAnalley BH. The adjuvant and immunopotentiating effects of a polydispersed B-(1,4)-linked acetylated mannan. Butterworth-Heinemann Conference-Immunopotenitators in Modern Vaccines. Paris, France, September 1993.

52. Kemp MC, Marshall GD, Chinnah AD, Yates KM, Rosenberg LJ, Tizard IR, McAnalley BH. *In vitro* immunological effects of acemannan, a polydispersed B-(1,4)-linked acetylated mannan. Butterworth-Heinemann Conference-Immunopotentiators in Modern Vaccines. September 1993.
53. McAnalley BH: Aloe vera: an antiviral?. Korean Society of Pharmacognosy International Seminar of Scientific Research on Aloe Seoul, Korea, October 7, 1993.

Additional Peer-Reviewed Abstracts

The research for the below publications was done under my direction and supervision while I was Vice President of Research and Development for Carrington Laboratories.

1. Weerts D, De Wit S, Gerard M, Rahir F, Jonckheere J, Clumeck N: A phase II study of (Carrisyn TM) (acemannan) alone and with AZT among symptomatic and asymptomatic HIV patients (p). Presented at the 6th International Conference on AIDS, San Fransisco, California, June 20-21, 1990.
2. Carpenter RH, Harris CK, Bronstad DC, King G, Biehle GA, Walker B, Yates KM, Tizard IR: Effect of acemannan in treatment of feline immunodeficiency virus-infected cats. Presented at 1st International Conference of Feline Immunodeficiency Virus Researchers, Davis, California, September 4-7, 1991.
3. Rosenberg LJ, Yates KM: Improved feline peripheral blood mononuclear cell preparation for flow cytometry. Presented at the First International Conference of Feline Immunodeficiency Virus Researchers, University of California, Davis, CA, September 4-7, 1991.
4. Tizard IR, Carpenter RH, Kemp MC: Immunoregulatory effects of a cytokine-release enhancer (acemannan). Presented at the International Congress of Phytotherapy, Seoul, Korea, October 1991.
5. Yates KM, Carpenter HR, Harris CK et al. Use of acemannan in treatment of feline immunodeficiency virus disease. Minneapolis, Minnesota. Veterinary Cancer Society 11th Annual conference, October 1991.
6. King G, Harris C, Yates KM: Use of acemannan as an aid in the treatment of fibrosarcoma in dogs and cats. Presented at the American College of Veterinary Surgeons (ACVS) Veterinary Symposium: Small Animal San Francisco, CA, October 13-16, 1991.

7. King G, Carpenter RH, Yates KM: Use of acemannan immunostimulant as an aid in treatment and management of fibrosarcoma in dogs and cats. Presented at 11th Annual Conference of Veterinary Cancer Society, Minneapolis, Minnesota, October 27-29, 1991.
8. Tizard I, Carpenter RH: Acemannan's biological activity and effect on norman murine sarcoma in mice. Presented at 11th Annual Conference of Veterinary Cancer Society, Minneapolis, Minnesota, October 27-29, 1991.
9. Azghani A, Williams I, Holiday D, Johnson A: A b-linked mannan inhibits adherence of P. Aeuoginosa to lung epithelial cells. Poster/Slide Presentation at the ASM General Meeting, New Orleans, LA. May 1992.
10. Yates KM, Rabound J, Tizard IR: Pilot study of the effect of acemannan in cats infected with feline immunodeficiency virus. Presented at the 2nd Annual National Conference on HIV/AIDS Research, Vancouver, B C, May 28-29, 1992.
11. Reudy J, Singer J, Gill J, Arseneau R, Savage B, MacNeil N, Rabound J, Montaner JS: A randomized placebo-controlled pilot study of acemannan used as an adjunct to antiretroviral therapy: preliminary results. Presented at the 8th International Conference on AIDS/III STD World Congress, Amsterdam, The Netherlands, July 19-24, 1992.
12. Parnell LS, Chinnah AD, Tizard IR. The effect of an acetylated mannan on wound healing in guinea pigs. Eur Tiss Repair Soc. Aug 26, 1992.
13. Tizard IR: The effect of acemannan on the healing of wounds in experimental animals. Presented at the International Symposium on Wound Healing and Wound Management, New Orleans, Louisiana, October 10-12, 1992.
14. Marshall GD. Cytokines: clinical potentials for the allergic patient. Allergy Proc. 1992 Nov; 13: 311-315.
15. Tizard IR. Use of immunomodulators to effect wound healing in an aging animal (Poster Presentation). Am Aging Assoc 23rd Ann Mtg/Am Coll Clin Gerontol 8th Ann Mtg. 1993; 24-
16. Marshall GD, Gibbons AS, Parnell LS: Human cytokines induced by acemannan. Poster Presentation at the 50th Annual Meeting of the American Academy of Allergy and Immunology, Chicago, Illinois; March 12-17, 1993.

17. Tizard IR, Busbee D, Kemp MC: Rapid acceleration of wound healing in young and old rats induced by application of a complex carbohydrate. Presented at the Keystone Symposium, Silverthorne, Colorado, March 29-April 4, 1993.
18. Kemp MC: The antiviral and immunopotentiating effects of acemannan: a polydispersed b-(1,4)-linked acetylated mannan. Presented at the Cambridge Healthtech Institute Conference on Glycotechnology, San Francisco, California, May 17-19, 1993.
19. Singer J, Gill J, Arseneau R, McLean B, Rabound J, Reudy J, Montaner JS: A randomized placebo-controlled trial of oral acemannan as an adjunctive to anti-retroviral therapy in advanced HIV disease. Presented at the IXth International Conference on AIDS, Berlin, Germany, June 6-11, 1993.
20. Yates KM, Kemp MC, Rabound J, Ford CR, Tizard IR: A comparison of the effects of acemannan (ACM) given by three routes of administration to feline immunodeficiency virus (FIV)-infected cats. Presented at the IXth International Conference on AIDS, Berlin, Germany, June 6-11, 1993.
21. Karaca K, Sharma JM, Nordgren R: The effect of acemannan on nitric oxide production by chicken mononuclear cells and a macrophage cell line. Presented at the 130th Annual Meeting of the AVMA, Minneapolis Minnesota, July 17-21, 1993.
22. Sharma JM, Karaca K, Pertile TL, Nordgren RM: Reduced viral immunodepression in chickens treated with an immunomodulator. Presented at the 130th Annual Meeting of the AVMA, Minneapolis, Minnesota, July 17-21, 1993.
23. Ramamoorthy L, Kemp MC, Tizard IR: Effect of acemannan on the production of cytokine in a macrophage cell line Raw264.7. Presented at the Joint Meeting of the European Tissue Repair Society and Wound Healing Society, Amsterdam, Netherlands, August 22-25, 1993.
24. Swaim SF, Ridell KP, McGuire JA: The effects of acemannan on wound healing models in the dog. Presented at the Joint Meeting of the European Tissue Repair Society and Wound Healing Society, Amsterdam, Netherlands, August 22-25, 1993.
25. Tizard IR, Maxwell B, Kemp MC, Chinnah AD: Accelerated wound healing induced by macrophage stimulants in rats: a genetically controlled phenomenon. Presented at the Joint Meeting of the European Tissue Repair Society and Wound Healing Society, Amsterdam, Netherlands, August 22-25, 1993.

26. Tizard IR, Maxwell B, Kemp MC, Chinnah AD: Comparison of the effects of acemannan on wound healing in young, old obese and old calorie-deprived rats. Presented at the Joint Meeting of the European Tissue Repair Society and Wound Healing Society, Amsterdam, Netherlands, August 22-25, 1993.
27. Busbee D, Merriam E, Campbell B: Immune function differences in aged and young rodents: effects of an acetylated b(1,4)-linked polymannose as an immunomodulator. Presentation at the American Aging Association 23rd Annual Meeting, Montreal, Quebec, October 8-12, 1993.
28. Marshall GD: Cytokine production in the elderly: implications for therapeutic manipulations. Presentation at the American Aging Association 23rd Annual Meeting, Montreal, Quebec, October 8-12, 1993.
29. Santiago C. Clinical experience with Carrasyn™ Freeze-Dried Gel (Carrasyn FDG™) in full-thickness wounds. Presented at the Clinical Symposium on Pressure Ulcers, October, Nashville, TN. 1994.
30. Seeley JE, Mulder GD, Jensen J, Andrews K. A controlled, randomized, comparative study of wound dressing(containing a complex polymannose hydrogel)and gauze in the treatment of diabetic ulcers. Presented at the Symposium on Advanced Wound Care, Miami, Florida, April 28-30, 1994.
31. Tizard I, Kemp M. Use of macrophage stimulating agents to stimulate wound healing in aged rats. Presented at the Symposium on Advanced Wound Care, Miami, Floria, April 28-30, 1994.
32. Kemp MC, Ni Y, Tizard IR: Role of acemannan, a complex carbohydrate, in acceleration of the wound healing process: binding of selected growth factors. Presented at the 4th Annual Scientific Meeting of the Wound Healing Society, San Francisco, CA. May 18-21, 1994.
33. Ni Y, Kemp MC, Tizard IR: Identification of monocyte/macrophage proteins that bind to acemannan, a b-(1,4)-linked acetylated mannan. Presented at the 4th Annual Scientific Meeting of the Wound Healing Society, San Francisco, CA. May 18-21, 1994.
34. Lindblad WJ, Thul J. Sustained increase in collagen biosynthesis in acemannan impregnated PVA implants in the rat. Presented at the 4th Annual Scientific Meeting of the Wound Healing Society, San Francisco, CA. May 18-21, 1994.

35. Kemp MC, Ramamoorthy L, Zhang L, Tizard IR: Combinations of IFN- γ and acemannan differentially regulate expression of the inducible nitric oxide gene in raw 264.7 cells. Presented at the European Immunology Meeting, Barcelona, Spain, June 14-17, 1994.
36. Kemp MC, Ni Y, Tizard IR: Alternative role for acemannan in the acceleration of wound healing: a subset of heparin binding growth factors bind to acemannan. Poster presentation at the 4th Annual Meeting of the European Tissue Repair Society, Oxford, England, August 25-28, 1994.
37. Ni Y, Kemp MC, Tizard IR: Monocyte/macrophage exhibit receptor proteins specific for acemannan. Presented at the 4th Annual Scientific Meeting of the European Tissue Repair Society, Oxford, England. August 25-28, 1994.
38. Mulder GD, Jensen JL, Seeley JE, Peak-Andrews K: A controlled, randomized, comparative study of Carrisyn[®] hydrogel wound dressing and gauze in the treatment of diabetic ulcers. Presented at the 4th Annual Scientific Meeting of the European Tissue Repair Society, Oxford, England. August 25-28, 1994.
39. Mulder GD, Jensen JL, Seeley JE, Peak-Andrews K: A controlled randomized study of an amorphous hydrogel to expedite closure of diabetic ulcers. Presented at the 4th European Conference on Advances in Wound Management, Copenhagen, Denmark. September 6-9, 1994.
40. Tizard I. Pre-clinical and clinical development of a complex carbohydrate therapeutic: acemannan. Presented at the Carbohydrate-Based Therapeutics Conference, Washington, DC. September 28-30, 1994.
41. Robinson M, Reich C, Lashner B et al. Evaluation of oral acemannan in active ulcerative colitis. Presented at the American College of Gastroenterology, San Francisco, CA. September 28-October 1, 1994.
42. Reich C, Tiomny E, Gilat T. Evaluation of oral acemannan in active ulcerative colitis. Presented at the 10th Annual Congresses of Gastroenterology, Los Angeles, CA. October 3-6, 1994.
43. Talmadge J, Kelsey L, Brown G, Egger S, Rosenberg L. Acemannan, a polysaccharide with hematopoietic properties. Presented at the American Society for Blood and Marrow Transplantation 1st Annual Meeting, Keystone, CO. January 26-28, 1995.

The following publications were not done under my direction, but was a result of my work with acemannan.

1. Thompson JE. Upper respiratory tract immunomodulator-acetyl mannan. Presented at the AAOA Annual Meeting Program, Minneapolis, Minnesota, September 1993.

UNDERGRADUATE COLLEGE COURSES

Chemistry -24 semester hours
Mathematics -24 semester hours
Physics -20 semester hours
Biology -8 semester hours
Biostatistics -3 semester hours

GRADUATE COLLEGE COURSES

Toxicology- 61 semester hours
Pharmacology -40 semester hours
Biochemistry- 20 semester hours
Chemistry -24 quarter hours
Biology -24 semester hours

PAST PROFESSIONAL CONSULTANT TO THE FOLLOWING

U.S. Environmental Protection Agency
U.S. Food and Drug Administration
U.S. Department of Labor, Occupational Safety and Health Administration
U.S. Office of Toxic Substances
U.S. Department of Justice
Texas Attorney General's Office
Louisiana Department of Natural Resources
Louisiana Attorney General's Office
United Elchem Industries, Inc.
H.E. Butt Grocery Company
Helene Curtis Industries, Inc.
Craddock and McDowell, Limited
Southern Methodist University
National Aloe Science Council
National Nutritional Food Association

CLIENTS AND PROJECTS

United Elchem Industries, Inc. (Mr. Tom Locashio -contact)
114535 Reeder Road
Dallas, Texas 75229
(Studied health effects of chemicals in plastic pipe)

H.E. Butt Grocery Company
P.O. Box 9216
Corpus Christi, Texas 78408
(Proved food was safe for human consumption)

Helene Curtis (Dr. Meltzer -contact)
Chicago, Illinois
(Provided toxicological product evaluation/prepared medical-legal defense)

Orgain, Bell and Tucker
470 Orleans Street
Beaumont, Texas 77701
(Provided scientific consultation for James E. Raza et al. vs. Independent Refining Corp., et al OB & T File XX-7213)

MEDICAL-LEGAL EXPERIENCE (scientific consultant/expert witness)

United States District Court, District of New Jersey
United States of America, Plaintiff vs. Nick Li Pari Landfill, Defendant

United States District Court
Eastern District of Louisiana -Judge Arceneaux
United States of America, Plaintiff vs. 2001, Inc.; Southeastern Chemical Company, Inc., Remy Gross II and Robert Weiner, Defendants

United States District Court, Eastern District of Arkansas -Judge Woods
United States of America, Plaintiff vs. Vertac Chemical Corporation and Hercules Inc., Defendants

United States District Court, Middle District of Louisiana -Judge Polozola
United States of America, Plaintiff vs. Petro Processors of Louisiana, Inc., U.S.S. Chemical Co., Copolymer Rubber and Chemical Corp.; Uniroyal corp.; Dow Chemical Co.; Ethyl Corp.; Shell Chemical Corp.; American Hoechst Co.; Exxon Corporation; Exxon Chemical Corp. and Rubicon Chemical Corp., Defendants

United States District Court
Southern District of Texas, Brownsville Division -Jude Vela
United States of America, Plaintiff vs. Frank J. Dusek; Helena Chemical Co. and
Tex-Ar, Inc., Defendants

United States District Court, Western District of Wisconsin
United States of America, Petitioner vs. Dr. Deborah A. Barsotti; Dr. Merel A.
Evenson; Dr. Stanley Inhorn; S.K. Schwartz; The Board of Regents of the
University of Wisconsin and John V. Miller, Respondents

Louisiana Environmental Control Commission
State Commissioners Court
Louisiana Department of Natural Resources vs. Rollins Environmental Services
(Exxon Chemical Co.)

Craddock and McDowell, Limited
Consulting Engineering and Fire Science
Two Kingwood Place
Kingwood, Texas 77339
(Provided scientific consultation, experimental design, analysis, interpretation
and prepared a medical-legal defense)

Southern Methodist University
P.O. Box 237
Dallas, Texas 75275
(Conducted scientific investigation of suspected metal poisoning)
Gardere & Wynne (Jess Rickman, III)
Attorneys and Counselors at Law
1500 Diamond Shamrock Tower
Dallas, Texas 75201
(Vina Sue McCoy vs. Virginia Chemical Company)

Mehaffy, Weber, Keith and Gonsoulin (John Smith)
Attorneys and Counselors at Law
1006 Green Avenue
Orange, Texas 77630
(Raza et al vs. Craddock and McDowell)

Vial, Hamilton, Koch, Tulb, Knox and Stradley
Attorneys and Counselors at Law (Christopher A. Payne)
Dallas, Texas 75201
(Betty Clark vs. Helene Curtis Industries, Ind.)
Avacare (Clinton Howard)
9200 Carpenter Freeway
Dallas, Texas 75247
(Provided general scientific consulting and laboratory services)

AloMega Laboratories (Don Smothers)
9002 Chancellor Row
Dallas, Texas 75247
(Provided scientific consulting and laboratory analysis)

Aloe Vera of America (Bill Coats)
802 Easy Street
Garland, Texas 75042
(Provided scientific consulting and laboratory services)

United States District Court
Southern District of Texas, Houston Division -Grand Jury
United States of America vs. Gulf Electroquip, et al.

United States District Corp.
Southern District of Texas, Brownsville Division
United States of America vs. Monochem, Diamond Shamrock, Inserv, et al.

United States District Court, Lubbock, Texas
Vina Sue McCoy vs. Virginia Chemical Company

Committee on Public Works and Transportation
U.S. House of Representatives/ Subcommittee on Investigation and Oversight
B376 Rayburn Building
Washington, D.C. 20515

United States District Court -Judge Hill
1100 Commerce Street
Dallas, Texas 75242
Marva R. Baker, et al. vs. Dixie Metals Company, et al.

United States District Court
Central District of California -Judge Robert M. Takasugi
Nutri-Metics International vs. Carrington Laboratories, Inc.